



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/590,003

06/13/2007

Nicolai Tarasinski

09379W-US

7081

30689

7590

07/01/2011

DEERE & COMPANY  
ONE JOHN DEERE PLACE  
MOLINE, IL 61265

EXAMINER

KHATIB, RAMI

ART UNIT

PAPER NUMBER

3663

MAIL DATE

DELIVERY MODE

07/01/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,003	<b>Applicant(s)</b> TARASINSKI ET AL.	
	<b>Examiner</b> RAMI KHATIB	<b>Art Unit</b> 3663	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### ***Specification***

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### ***Claim Objections***

2. Claims 31 and 39 are objected to because of the following informalities: Claim 31, the applicant refers to the input interface with (36), it should be (38). Claim 39, the

Art Unit: 3663

applicant claims drive system according to one of claims 1-48, the examiner believes this to be a typographical mistake and it should be claims 1-38. Furthermore, the claim or claims must commence on a separate physical sheet or electronic page in accordance with 37 CFR 1.52(b)(3). Any sheet including a claim or portion of a claim may not contain any other parts of the application or other material. Appropriate correction is required.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “spring”, “the converter module and/or the first drive module are/is arranged essentially coaxial to the input interface” and “the second drive module is arranged essentially coaxial to the output interface” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

Art Unit: 3663

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**Note:** the use of reference characters and limitation enclosed within "-- --" are to be considered as having no effect on the scope of the claims.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

6. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: "reversibly". It is not

Art Unit: 3663

clear to the examiner what the applicant is trying to convey by the term “reversibly”. The limitation of the claim is vague and ill defined.

Claims 2-51 rejected under 35 U.S.C. 112, second paragraph, as being dependent on claim 1.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lilley et al US 2002/0109357 A1 (hence Lilley'357).

9. In re claim 1, Lilley'357 discloses the claimed invention including the following:

- Drive system for a vehicle, especially for an agricultural or industrial utility vehicle, with a first and a second drive module (Fig.2, and #10a, and #10b), a first and a second branch (Fig.2, #10sa and #10sb), at least one controller (the presence of a controller is inherent in the hybrid electric vehicle system), and at least one output interface (Fig.2, “output”), wherein the first drive module can be connected to the first branch, wherein the second drive module can be connected to the second branch (Fig.2, #10a, #10b, #10sa and #10sb), wherein the first branch and/or the second branch can be

Art Unit: 3663

- connected reversibly to the output interface (Fig.1, and Paragraph 0031), and wherein the drive modules can be controlled with at least one controller, such that the drive modules can output a given continuously and independently of each other (Fig.2, and Paragraph 0029)
10. In re claim 2, Lilley'357 teaches the following:
- one drive module has an internal combustion engine, especially a diesel engine (Fig.2, #20 and Paragraph 0031)
11. In re claim 3, Lilley'357 teaches the following:
- one drive module has an energy source generating electric current and a mechanical conversion stage (Fig.2, #22, and #24)
12. In re claim 4, Lilley'357 teaches the following:
- one input interface and at least one converter module is provided, wherein the input interface can be connected to an energy source wherein energy generated by the energy source can be distributed via the input interface to the first and to the second branch, wherein the converter module is connected to at least one drive module, and wherein the converter module can be connected to the input interface (Paragraph 0029 and Fig.2)
13. In re claim 5, Lilley'357 teaches the following:
- energy can be distributed or transported arbitrarily between the converter module and at least one drive module (Paragraph 0029 and Fig.2)
14. In re claim 6, Lilley'357 teaches the following:
- the energy source generates mechanical and/or electrical energy (Fig.1, #20)

Art Unit: 3663

15. In re claim 7, Lilley'357 teaches the following:

- a controller is provided, which controls the energy source, whereby preferably the energy generated by the energy source is variable (Paragraph 0024, conventional mechanical mode, and Paragraph 0027, "when the vehicle is accelerated to a predetermined speed")

16. In re claim 8, Lilley'357 teaches the following:

- the energy source includes an internal combustion engine, especially a diesel engine, a generator driven by an internal combustion engine, a fuel cell, and/or an electrical storage (Paragraphs 0030-0031)

17. In re claim 9, Lilley'357 teaches the following:

- another output interface is provided, which can be connected reversibly to one of the two branches, preferably to the second branch (Paragraph 0018, "The output of this system is in the form of a shaft that can be adapted to drive various loads")

18. In re claim 10, Lilley'357 teaches the following:

- mechanical and/or electrical energy can be transmitted via the input interface the output interface, and/or the other output interface (Paragraph 0019 "torque")

19. In re claim 11, Lilley'357 teaches the following:

- a shaft is provided for transmitting mechanical energy (Fig.1, #20s)

20. In re claim 12, Lilley'357 teaches the following:



Art Unit: 3663

- the first and/or the second branch and/or the output interface each has at least one mechanical gear stage, with which preferably a rotational speed reduction and/or a rotational speed reversal can be achieved (Paragraph 0022)
21. In re claim 13, Lilley'357 teaches the following:
- the mechanical gear stage has at least one spur gear stage and/or a planetary gear unit (Paragraph 0004)
22. In re claim 14, Lilley'357 teaches the following:
- a reversible connection between an output interface and a branch can be established with the aid of a positive-fit coupling (Fig.1, #40, #41, #42, and #43)
23. In re claim 15, Lilley'357 teaches the following:
- the positive-fit coupling can be shifted by means of an electrically activated shift element, wherein preferably the shift element for coupling or decoupling the reversible connection works against a spring force (Paragraph 0024, clutch mechanism)

### ***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

26. Claims 16-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilley'357 in view of Hirt et al US 2002/0082134 A1 (hence Hirt'134).

27. In re claim 16, Lilley'357 discloses the structural elements of the claimed invention but fails to teach the following:

- the positive-fit coupling works according to the principle of a claw coupling

28. Nevertheless, Hirt'134 discloses a Transmission with an electro-mechanical energy converter and teaches the following:

- the positive-fit coupling works according to the principle of a claw coupling  
(Paragraph 0107)

29. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Lilley'357 reference with the friction locking clutches, as taught by Hirt'134 in order to optimize the efficiency of the transmission by using form-locking clutches that can be configured in various different ways including the principle of claw coupling (Hirt'134, Paragraphs 0106).

Art Unit: 3663

All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time the invention was made.

30. In re claim 17, Lilley'357 teaches the following:

- a converter module receives mechanical and/or electrical energy (Fig.2, #20 and #24)

31. In re claim 18, Lilley'357 teaches the following:

- a drive module outputs mechanical and/or electrical energy (Fig.1, #10 "a reversible electric motor")

32. In re claim 19, Lilley'357 teaches the following:

- a conversion between electrical and mechanical energy is performed with the converter module and the drive modules (Paragraphs 0029 and 0031)

33. In re claim 20, Lilley'357 teaches the following:

- the converter module has at least one electric machine that can be operated as a generator (Fig.2, #22)

34. In re claim 21, Lilley'357 teaches the following:

- the first and the second drive module each has an electric machine that can be operated as a motor (Fig.2, #10a, and 10b, "a reversible electric motor")

35. In re claim 22, Hirt'134 teaches the following:

Art Unit: 3663

- a conversion between hydraulic and mechanical energy is performed with the converter module and the drive modules (Paragraph 0010)
36. In re claim 23, Hirt'134 teaches the following:
- wherein the converter module has at least one mechanically driven, preferably adjustable, hydropump (Paragraph 0010)
37. In re claim 24, Hirt'134 teaches the following:
- the first and the second drive module each has a preferably adjustable hydromotor (Paragraphs 0019 and 0020)
38. In re claim 25, Hirt'134 teaches the following:
- mechanical energy can be converted with the converter module and the drive modules (Paragraph 0011)
39. In re claim 26, Hirt'134 teaches the following:
- the converter module has an input shaft of a belt gear, a friction gear, or a chain converter (Paragraph 0006)
40. In re claim 27, Hirt'134 teaches the following:
- the first and the second drive module each has at least one output shaft of the corresponding gear (Paragraph 0091)
41. In re claim 28, Hirt'134 teaches the following:
- the input interface is mechanically coupled to the first and the second branch (Fig.1, #10)
42. In re claim 29, Hirt'134 teaches the following:

Art Unit: 3663

- the converter module is allocated to the energy source or has an electric machine driven by the energy source and operating as a generator  
(Paragraph 0032)

43. In re claim 30, Hirt'134 teaches the following:

- the first and the second drive module each has an electric machine operating as a motor (Paragraph 0007)

44. In re claim 31, Hirt'134 teaches the following:

- the input interface is electrically or hydraulically coupled to one of the two branches and the input interface is mechanically coupled to the other of the two branches (Fig.1, and at least Paragraphs 0011 and 0091)

45. In re claim 32, Lilley'357 teaches the following:

- the converter module has an electric machine driven mechanically by the energy source and operating as a generator (Fig.2)

46. In re claim 33, Hirt'134 teaches the following:

- the first branch can be driven mechanically with the first drive module (Fig.1, #101)

47. In re claim 34, Hirt'134 teaches the following:

- the second drive module can be connected to the second branch or has a power-diverted arrangement to this branch, preferably via a planetary gear (Fig.1, #100)

48. In re claim 35, Hirt'134 teaches the following:

Art Unit: 3663

- a brake, preferably a friction brake, with which at least one part of the second branch can be stopped relative to a housing of the drive system, is provided in the second branch (Fig.3, #207)

49. In re claim 36, Hirt'134 teaches the following:

- wherein the converter module and/or the first drive module are/is arranged essentially coaxial to the input interface (Fig.1)

50. In re claim 37, Hirt'134 teaches the following:

- the second drive module is arranged essentially coaxial to the output interface (Fig.1)

51. In re claim 38, Hirt'134 teaches the following:

- the first drive module is arranged spatially downstream of the converter module with reference to the input interface and Wherein preferably the first drive module is arranged downstream of the second drive module with reference to the input interface (Fig.1)

52. In re claim 39, Hirt'134 teaches the following:

- of the converter module and/or the drive modules, at least two modules are arranged essentially coaxial to each other (Fig.1)

53. In re claim 40, Hirt'134 teaches the following:

- wherein the first branch and the second branch can each be connected reversibly to the output interface via a shiftable multi-step transmission (Paragraph 0005)

54. In re claim 41, Hirt'134 teaches the following:

Art Unit: 3663

- the second branch can be connected reversibly to the other output interface via a shiftable multi-step transmission (Paragraph 0005, “countershaft”)
55. In re claim 42, Hirt’134 teaches the following:
- at least two different transmission ratios can be realized with the shiftable multi-step transmission (Paragraph 0007)
56. In re claim 43, Hirt’134 teaches the following:
- the output interface can be connected to a traction drive and/or that the other output interface can be connected to a power take-off (Paragraph 0005)
57. In re claim 44, Hirt’134 teaches the following:
- it is possible to shift between the two branches under loading (Paragraph 0090)
58. In re claim 45, Hirt’134 teaches the following:
- at least one sensor is provided, with which the operating state of at least one component of the drive system can be detected and can be fed to the controller, so that preferably the possible shift states of the drive system can be detected redundantly (Paragraphs 0087, and 0121)
59. In re claim 46, Hirt’134 teaches the following:
- in a first shift state, the first branch is connected to the output interface and wherein the first drive module is connected to the first branch (Fig.20, and Paragraphs 0157+)
60. In re claim 47, Hirt’134 teaches the following:

Art Unit: 3663

- the second branch is connected to the other output interface and wherein the second drive module is connected to the second branch (Fig.1, in a case of a countershaft)

61. In re claim 48, Hirt'134 teaches the following:

- in a second shift state, the first and the second branch are connected to the output interface and wherein preferably the rotational speeds of the two drive modules are tuned or synchronized to the rotational speed of the output interface (Fig. 24, and Paragraphs 0007, 0083, 0165)

62. In re claim 49, Hirt'134 teaches the following:

- in a third shift state, the second branch is connected to the output interface and that preferably the second branch is connected to the other output interface (Fig.34, and Paragraph 0177)

63. In re claim 50, Hirt'134 teaches the following:

- an agricultural or industrial utility vehicle, preferably a tractor (Paragraph 0001, vehicle with countershaft)

64. In re claim 51, Hirt'134 teaches the following:

- Drive module and/or converter module and/or controller a drive system (Abstract)

### ***Conclusion***

65. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



Art Unit: 3663

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAMI KHATIB whose telephone number is (571)270-1165. The examiner can normally be reached on Monday-Friday/8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. K./  
Examiner, Art Unit 3663

/JACK KEITH/  
Supervisory Patent Examiner, Art Unit 3663